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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/522,323	01/24/2005	George Edmond	BWT-70131	8834
24201 7590 02/20/2007 FULWIDER PATTON LLP HOWARD HUGHES CENTER 6060 CENTER DRIVE, TENTH FLOOR LOS ANGELES, CA 90045			EXAMINER RIVELL, JOHN A	
			ART UNIT 3753	PAPER NUMBER

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/20/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.		Applicant(s)	
	10/522,323		EDMOND ET AL.	
	Examiner		Art Unit	
	John Rivell		3753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 1/24/05 (application).
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 12-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 12-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 January 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>07222005</u> . | 6) <input type="checkbox"/> Other: _____ |

By preliminary amendment filed concurrently with the application, claim 11 has been canceled. New claims 12-31 have been added. Thus claims 1-10 and 12-31 are pending.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: "92", "93" (page 5, line 12), "90" (page 7, line 1), "91" (page 7, line 2), "200, 201, 202, 203" (page 8, line 18), "210" (page 8, line 27).

Additionally, concerning "seal 33" it is understood from the description the intention of the seal. However, the lead line for numeral 33 does not appear to lead to a "O-ring" as disclosed. Also, the "O-ring" as illustrated appears faint and is not cross hatched properly.

Lastly, the added penciled in illustration at the bottom right side of figure 1 is not understood.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

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The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 13, 14, 16, 17, 22, 23, 28 and 29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 13 and 14, these claims are currently dependent on canceled claim 11. As such they are indefinite. However, in the rejection(s) below, these claims are considered as if properly dependent on claim 12.

Regarding claims 16, 17, 22, 23, 28 and 29, the structural elements and corresponding function of the claims do not follow from the claims from which they depend.

As background, applicant discloses the reversibility of the function of ports 12 and 14. That is, in one embodiment port 12 is connected to a pressure source and port 14 is connected to the reservoir port. In the other embodiment, port 12 is connected to the reservoir and port 14 is connected to the pressure source.

As amended, claim 1 is believed directed to the first embodiment where port 12 is connected to a pressure source and port 14 is connected to the reservoir port. Claim 2 as amended is believed to be directed to the other embodiment where port 12 is connected to the reservoir and port 14 is connected to the pressure source. These assumptions are based on the functional paragraphs at claim 1, lines 18-23 and in claim 2, lines 18-23.

As such, in view of the disclosure and considering claim 2 as the embodiment in which port 12 is connected to the reservoir and port 14 is connected to the pressure source, the functional paragraph is interpreted as meaning (using applicants numerals in parentheses):

“when the first (upper) end of the tubular sleeve (11) valve engages the first valve seat (22) surface then fluid flows through the tubular passage in the sleeve (11) to the third fluid conduit (16) from the first conduit (14, pressure source) and when the second end (lower) of the tubular sleeve (11) engages the second valve seat surface (23) then fluid flows through a gap between the first (upper) end of the tubular sleeve (11) and the first valve seat (22) from the third fluid conduit (16) to the second fluid conduit (12, exhausting fluid)”.

In interpreting claims 16, 22, and 28, each claim recites:

“the first fluid conduit opens on to the valve chamber by way of a gallery which surrounds the first (emphasis added here) end of the tubular sleeve valve”

In analyzing claims 16, 22 and 28, based on the description, it is seen that the “first fluid conduit (14 does not) open on to the valve chamber by way of a gallery which surrounds the first end” but rather, opens on to the valve chamber by way of a gallery which surrounds the second or lower end of the sleeve.

The same analysis applies to claims 17, 23 and 29 which recite:

“the second fluid conduit opens on to the valve chamber by way of a gallery which surrounds the second (emphasis added here) end of the tubular sleeve valve”.

In analyzing claims 17, 23 and 29, based on the description, it is seen that the “second fluid conduit (12 does not) open on to the valve chamber by way of a gallery which surrounds the second end” but rather, opens on to the valve chamber by way of a gallery which surrounds the first or upper end of the sleeve.

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In the rejection(s) below, each of claims 16, 22 and 28 are analyzed as if properly worded to recite that the "gallery... surrounds the second end". Each of claims 17, 23 and 29 are similarly treated as if the claims properly worded to recite that the "gallery... surrounds the first end".

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 7, 8, 16 and 17 are rejected under 35 U.S.C. §102 (b) as being anticipated by Moretti (GB 2 008 230 A).

The device of Moretti is disclosed as being utilized in two different ways. A first way includes using port 12 as the pressure source and port 8 as the reservoir connection (page 1, lines 115-120) and the second way includes using the port 8 as the pressure source and port 12 as the reservoir port (page 2, lines 23-28).

Considering the first embodiment disclosed, the document to Moretti discloses, in figure 1 for example, a "control valve for controlling flow of hydraulic fluid, the control valve comprising: a valve housing (2); a sleeve (20) slidable in a valve chamber (4) in the valve housing (2); a first fluid conduit (12) for connecting the valve chamber (4) to a source of pressurised hydraulic fluid; a second fluid conduit (8) for connecting the valve chamber (4) to a fluid return for returning hydraulic fluid to a reservoir; a third fluid conduit (34) for connecting the valve chamber (4) to deliver hydraulic fluid to and receive hydraulic fluid from apparatus which uses the hydraulic fluid flow controlled by

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the control valve, wherein: the sleeve (20) is a tubular sleeve having a tubular passage therethrough; the valve housing has a pair of spaced apart valve seat surfaces (13, 9), a first valve seat surface (13) which is engageable by a first (lower) end of the tubular sleeve (20) and a second valve seat surface (9) which is engageable by a second (upper) end of the tubular sleeve (20); the third fluid conduit (34) opens on to the valve chamber (4) by way of a port which is surrounded by the first valve seat surface (13); and when the first (lower) end of the tubular sleeve (20) engages the first valve seat (13) surface then fluid flows through the tubular passage in the sleeve (20) from the third fluid conduit (34) to the second fluid conduit (8) and when the second (upper) end of the tubular sleeve (20) engages the second valve seat surface (9) then fluid flows through a gap between the first (lower) end of the tubular sleeve (20) and the first valve seat (13) to the third fluid conduit (34) from the first fluid conduit (12); wherein: a spring means (read on the illustrated spring 38 and the unillustrated spring of the solenoid 16, page 1, lines 120-127) biases the sleeve (20) into engagement with the first valve seat (13) surface (as shown on fig. 1); characterised in that: the spring means acts directly on the sleeve (20)" as recited in claim 1.

In the other embodiment disclosed, the document to Moretti discloses a "control valve for controlling flow of hydraulic fluid, the control valve comprising: a valve housing (2); a sleeve (20) slidable in a valve chamber (4) in the valve housing (2); a first fluid conduit (8) for connecting the valve chamber (4) to a source of pressurised hydraulic fluid; a second fluid conduit (12) for connecting the valve chamber (4) to a fluid return for returning hydraulic fluid to a reservoir; a third fluid conduit (34) for connecting the

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valve chamber (4) to deliver hydraulic fluid to and receive hydraulic fluid from apparatus which uses the hydraulic fluid flow controlled by the control valve, wherein: the sleeve (20) is a tubular sleeve having a tubular passage therethrough; the valve housing has a pair of spaced apart valve seat surfaces (13, 9), a first valve seat surface (13) which is engageable by a first (lower) end of the tubular sleeve (20) and a second valve seat surface (9) which is engageable by a second (upper) end of the tubular sleeve (20); the third fluid conduit (34) opens on to the valve chamber (4) by way of a port which is surrounded by the first valve seat surface (13); and when the first (lower) end of the tubular sleeve (20) engages the first valve seat (13) surface then fluid flows through the tubular passage in the sleeve (20) to the third fluid conduit (34) from the first fluid conduit (8) and when the second (upper) end of the tubular sleeve (20) engages the second valve seat surface (9) then fluid flows through a gap between the first (lower) end of the tubular sleeve (20) and the first valve seat (13) from the third fluid conduit (34) to the second fluid conduit (12); wherein: a spring means (read on the illustrated spring 38 and the unillustrated spring of the solenoid 16, page 1, lines 120-127) biases the sleeve (20) into engagement with the first valve seat (13) surface (as shown on fig. 1); characterised in that: the spring means acts directly on the sleeve (20)" as recited in claim 2.

Regarding claim 7, in Moretti, "the first fluid conduit (12) opens on to the valve chamber (4) by way of a gallery (10) which surrounds the first (lower) end of the tubular sleeve valve (20)" as recited.

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Regarding claim 8, in Moretti, "the second fluid conduit (8) opens on to the valve chamber (4) by way of a gallery (6) which surrounds the second (upper) end of the tubular sleeve valve (20)" as recited.

Regarding claim 16 (which claim is dependent on claim 2 and is reinterpreted as noted above), in Moretti, "the first fluid conduit (8) opens on to the valve chamber (4) by way of a gallery (6) which surrounds the (second upper) end of the tubular sleeve valve (20)" as recited.

Regarding claim 17, (which claim is dependent on claim 2 and is reinterpreted as noted above), in Moretti, "the second fluid conduit (12) opens on to the valve chamber (4) by way of a gallery (10) which surrounds the (first lower) end of the tubular sleeve valve (20)" as recited.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 3, 5, 12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moretti in view of Brehm et al.

The document to Moretti discloses all the claimed features with the exception of having "the tubular sleeve (20) connected by a rod to (the) armature" (at 18 of Moretti, claims 3 and 12).

The patent to Brehm et al. discloses that it is known in the art to employ a connected armature rod 20 connected to the reciprocating supply/exhaust valve head 12 and to the moving armature 15 of the valve operating electromagnet 13 for the purpose of precluding lost motion between movement of the armature and valve head movement that would otherwise potentially occur should the armature not be connected to the valve head as in Moretti.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Moretti a mechanically connected rod between the armature at 18 and the sleeve valve 20 for the purpose of precluding lost motion between movement of the armature and valve head movement that would otherwise potentially occur should the armature not be connected to the valve head as recognized by Brehm et al.

Further regarding claims 3 and 12, in Moretti, "the armature (18 is inherently) located within an electrical coil (forming the electromagnet 16) also located outside the valve chamber (4)" as recited.

Regarding claims 5 and 14, in Moretti, "the spring means (e.g. the spring 38 and the not shown biasing spring of the electromagnet) applies a preload on the sleeve (20) which must be overcome by a magnetic force applied to the armature (18) by a magnetic field generated by the (inherent) electrical coil (in electromagnet 16) before the sleeve (20) moves away from the first valve seat surface (13)" as recited.

Claims 4 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moretti in view of Roth et al.

The patent to Moretti discloses all the claimed features with the exception of having "the spring means comprises a spring which acts between a spring seat provided in the valve housing and a spring seat fixed to the exterior of the sleeve".

The patent to Roth et al. discloses that it is known in the art to employ a biasing spring at 68 of figure 1 located within the tubular supply/exhaust valve head 47 as well as a spring 120 external of the reciprocating sleeve supply/exhaust valve head 109 of fig. 2. These teachings of the single reference demonstrate the full functional and mechanical equivalence of the differences between the device of the claims (spring external to the sleeve) and the reference of Moretti (spring internal of the tubular sleeve).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Moretti a spring element external of the tubular sleeve 20 for the purpose of biasing the valve to a desired location as recognized by teaching of full functional and mechanical equivalence of Roth et al.

Claims 6 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moretti in view of Aumayer (cited by applicant).

The patent to Moretti discloses all the claimed features with the exception of having "a compliant seal... provided to act between the exterior of the tubular sleeve and facing surface of the valve housing in order to prevent fluid passing along the outside of the tubular sleeve between the first and second fluid conduits and wherein the compliant seal deforms when the sleeve slides in the valve chamber so as to reduce or prevent sliding contact between the sleeve and the compliant seal". The sleeve 20 of Moretti is disclosed as being sealed (page 1, lines 85-88).

The patent to Aumayer discloses that it is known in the art to employ a seal element at 35a located exterior of a tubular supply/exhaust valve sleeve 33 for the

purpose of mechanically sealing the fluid joint between the moving tubular valve element 33 and the stationary valve body at 34. Friction between the seal element 35a and the periphery of the sleeve 33 will induce deformation of the seal "when the sleeve (33) slides in the valve chamber so as to reduce or prevent sliding contact between the sleeve (33) and the compliant seal (35a)" as recited.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Moretti a mechanical seal element external of and in contact with the tubular sleeve 20 of Moretti for the purpose of mechanically sealing the fluid joint between the moving tubular valve element 20 and the stationary valve body at bore 4 as recognized by Aumayer.

Claims 9 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moretti in view of Tomlin et al.

The patent to Moretti discloses all the claimed features with the exception of having "the tubular sleeve valve (20 have) a tubular wall which tapers in thickness at both ends of the tubular sleeve valve"

The patent to Tomlin et al. discloses that it is known in the art to employ a tubular sleeve supply/exhaust valve head 16 which has a "tubular wall which tapers in thickness at both ends of the tubular sleeve valve" ending in thinner ends at 28 and 30 for the purpose of minimizing the pressure differential force exerted by fluid pressure on the tubular sleeve.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Moretti tapered ends at both ends of sleeve 20 for the purpose of minimizing the pressure differential force exerted by fluid pressure on the tubular sleeve as recognized by Tomlin et al.

Claims 10, 19, 22, 23, 25, 28, 29 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moretti in view of Mesenich.

The patent to Moretti discloses all the claimed features with the exception of having "the control valve is operated as a digital valve with rate of fluid flow through the control valve varied by controlling a timing of switching of the sleeve between engagement with the first and second valve seats" as recited in claims 10, 19, 25 and 31.

The patent to Mesenich discloses that it is known in the art to employ a tubular supply/exhaust valve head 151 "operated as a digital valve (i.e. pulse width modulated) with rate of fluid flow through the control valve varied by controlling a timing of switching of the sleeve between engagement with the first and second valve seats" at seats 152; 169, for the purpose of taking advantage of both energy consumption and controllability, over the conventional analog operating procedure.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Moretti a pulse width modulated operating characteristic actuating the electromagnet 16 therein for the purpose of taking advantage of both energy consumption and controllability, over the conventional analog operating procedure as recognized by Mesenich.

Regarding claim 22 (which claim is ultimately dependent on claim 2 and is reinterpreted as noted above), in Moretti, "the first fluid conduit (8) opens on to the valve chamber (4) by way of a gallery (6) which surrounds the (second upper) end of the tubular sleeve valve (20)" as recited.

Regarding claim 23, (which claim is ultimately dependent on claim 2 and is reinterpreted as noted above), in Moretti, "the second fluid conduit (12) opens on to the

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valve chamber (4) by way of a gallery (10) which surrounds the (first lower) end of the tubular sleeve valve (20)" as recited. .

Regarding claim 28 (which claim is ultimately dependent on claim 2 and is reinterpreted as noted above), in Moretti, "the first fluid conduit (8) opens on to the valve chamber (4) by way of a gallery (6) which surrounds the (second upper) end of the tubular sleeve valve (20)" as recited.

Regarding claim 29, (which claim is ultimately dependent on claim 2 and is reinterpreted as noted above), in Moretti, "the second fluid conduit (12) opens on to the valve chamber (4) by way of a gallery (10) which surrounds the (first lower) end of the tubular sleeve valve (20)" as recited.

Claims 20 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moretti in view of Brehm et al. as applied to claims 3, 5, 12 and 14 above, further in view of Roth et al. as applied to claims 4 and 13 above.

The patent to Moretti discloses all the claimed features with the exception of having "the tubular sleeve (20) connected by a rod to (the) armature" and having "the spring means comprises a spring which acts between a spring seat provided in the valve housing and a spring seat fixed to the exterior of the sleeve".

Firstly, the patent to Brehm et al. discloses that it is known in the art to employ a connected armature rod 20 connected to the reciprocating supply/exhaust valve head 12 and to the moving armature 15 of the valve operating electromagnet 13 for the purpose of precluding lost motion between movement of the armature and valve head movement that would otherwise potentially occur should the armature not be connected to the valve head as in Moretti.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Moretti a mechanically connected rod

between the armature at 18 and the sleeve valve 20 for the purpose of precluding lost motion between movement of the armature and valve head movement that would otherwise potentially occur should the armature not be connected to the valve head as recognized by Brehm et al.

Secondly, the patent to Roth et al. discloses that it is known in the art to employ a biasing spring at 68 of figure 1 located within the tubular supply/exhaust valve head 47 as well as a spring 120 external of the reciprocating sleeve supply/exhaust valve head 109 of fig. 2. These teachings of the single reference demonstrate the full functional and mechanical equivalence of the differences between the device of the claims (spring external to the sleeve) and the reference of Moretti (spring internal of the tubular sleeve).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Moretti a spring element external of the tubular sleeve 20 for the purpose of biasing the valve to a desired location as recognized by teaching of full functional and mechanical equivalence of Roth et al.

Further in Moretti, "the armature (18 is inherently) located within an electrical coil (forming the electromagnet 16) also located outside the valve chamber (4)" and "the spring means (e.g. the spring 38 and the not shown biasing spring of the electromagnet) applies a preload on the sleeve (20) which must be overcome by a magnetic force applied to the armature (18) by a magnetic field generated by the (inherent) electrical coil (in electromagnet 16) before the sleeve (20) moves away from the first valve seat surface (13)" as recited.

Claims 21 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moretti in view of Mesenich, as applied to claims 10, 19, 22, 23, 25, 28, 29 and 31 above, further in view of Aumayer as applied to claims 6 and 15.

The patent to Moretti, as modified by Mesenich, discloses all the claimed features with the exception of having "a compliant seal... provided to act between the exterior of the tubular sleeve and facing surface of the valve housing in order to prevent fluid passing along the outside of the tubular sleeve between the first and second fluid conduits and wherein the compliant seal deforms when the sleeve slides in the valve chamber so as to reduce or prevent sliding contact between the sleeve and the compliant seal". The sleeve 20 of Moretti is disclosed as being sealed (page 1, lines 85-88).

The patent to Aumayer discloses that it is known in the art to employ a seal element at 35a located exterior of a tubular supply/exhaust valve sleeve 33 for the purpose of mechanically sealing the fluid joint between the moving tubular valve element 33 and the stationary valve body at 34. Friction between the seal element 35a and the periphery of the sleeve 33 will induce deformation of the seal "when the sleeve (33) slides in the valve chamber so as to reduce or prevent sliding contact between the sleeve (33) and the compliant seal (35a)" as recited.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Moretti, as modified by Mesenich, a mechanical seal element external of and in contact with the tubular sleeve 20 of Moretti for the purpose of mechanically sealing the fluid joint between the moving tubular valve element 20 and the stationary valve body at bore 4 as recognized by Aumayer.

Claims 24 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moretti in view of Mesenich, as applied to claims 10, 19, 22, 23, 25, 28, 29 and 31 above, further in view of Tomlin et al. as applied to claims 9 and 18 above.

The patent to Moretti, as modified by Mesenich, discloses all the claimed features with the exception of having "the tubular sleeve valve (20 have) a tubular wall which tapers in thickness at both ends of the tubular sleeve valve"

The patent to Tomlin et al. discloses that it is known in the art to employ a tubular sleeve supply/exhaust valve head 16 which has a "tubular wall which tapers in thickness at both ends of the tubular sleeve valve" ending in thinner ends at 28 and 30 for the purpose of minimizing the pressure differential force exerted by fluid pressure on the tubular sleeve.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ in Moretti, as modified by Mesenich, tapered ends at both ends of sleeve 20 for the purpose of minimizing the pressure differential force exerted by fluid pressure on the tubular sleeve as recognized by Tomlin et al.

Applicant is advised that should claim 19 be found allowable, claims 25 and 31 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. Additionally, should claim 21 be found allowable, claim 27 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. Lastly, should claim 24 be found allowable, claim 30 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Rivell whose telephone number is (571) 272-4918. The examiner can normally be reached on Mon.-Thur. from 6:30am-5:00pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eric Keasel can be reached on (571) 272-4929. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


John Rivell
Primary Examiner
Art Unit 3753

j.r.